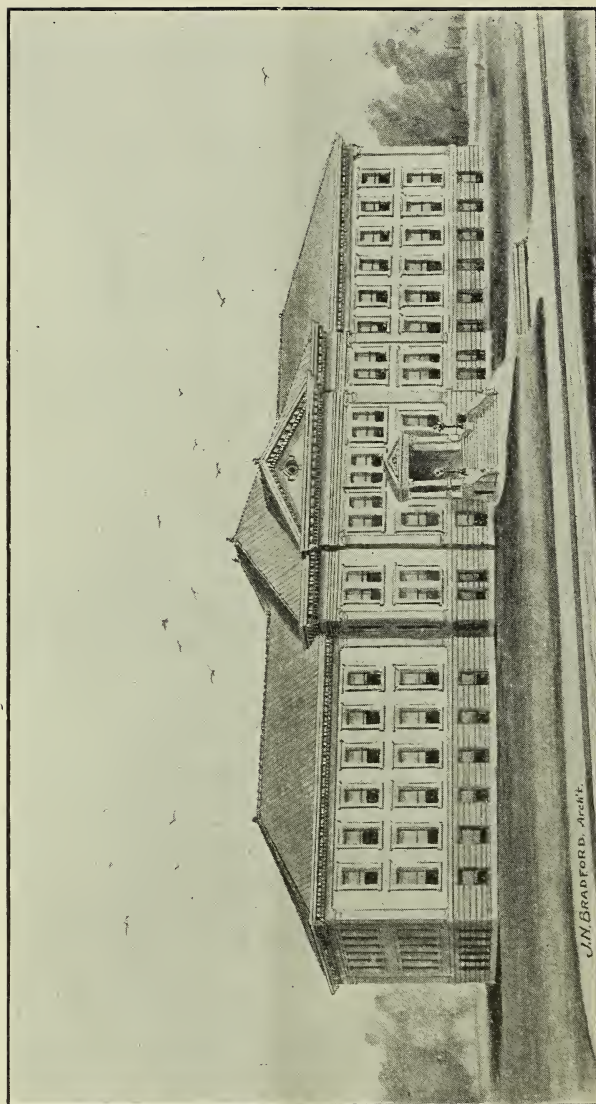


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New Engineering Building, in Course of Construction at the University.

THE AGRICULTURAL STUDENT.

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EDITORIAL CHAT.

Members of the Agricultural Students' Union will note with interest the recent formation of such an organization at Cornell University. This method of co-operative experimentation is now being followed in connection with several of our larger institutions and is proving very successful. There are difficulties and obstacles to be met in such work, some of them of much importance, but a united body of ex-students and alumni who have received the proper inspiration from the agricultural college can accomplish untold good, not only for themselves, but for the college and for agriculture as a whole.

The Agricultural Students' Union of Ohio has during the past year made wonderful strides in advance of former accomplishments, and the interest that is now being shown in the work of the organization is certain to result in a most useful future. Wonderful possibilities are in sight and the person who fails to avail himself of the opportunities offered by connection with the organization will deprive himself of much good. There was a time when many were decidedly pessimistic regarding the future

of the Union, but that feeling is being rapidly dissipated by the warmth of enthusiasm which now prevails. There's something coming and we advise all readers to either "get in the wagon" or on the pushing side. There'll be no regret of the action.

A neat little catalogue of the District School Libraries of the Springfield Township Schools, of Clark county, has been received. It contains a short description of each book, and the grade of pupils for which the book is adapted is indicated. Many of these books are also of interest to adults. Such a library, together with the Ohio State Traveling Library, is of untold benefit to a community and this catalogue should be of great use to the patrons of the school. The catalogue contains also many interesting illustrations. The contrast between the new method of transporting pupils and the old way is happily shown. There are a number of illustrations of youth studying and experimenting in farming and gardening. The catalogue also cleverly suggests by a series of photographs that the road to learning for those interested in farming leads through Townshend Hall, the agricultural building of Ohio State University. In this connection, it may be of interest to note that Superintendent Graham has organized a Boys' Experimental Club in his township and has twenty-five or thirty boys who are to carry on experiments in agriculture. These experiments will be under the immediate direction of Superintendent Graham, but will be carried on in accordance with the general plan of the Ohio Agricultural Students' Union. The Union will furnish the seeds and other materials without charge.

This is a plan that may well be imitated by other school superintendents, and Superintendent Graham is to be

congratulated upon initiating this plan in Ohio.

Through the courtesy of the International Stock Food Company we have received a copy of their new catalogue for Directum, 2:05 $\frac{1}{4}$, and also a splendid engraving of Dan Patch, 1:39 1-5. This company has purchased over 600 acres of the best farm land in Minnesota and is making it a model stock farm. They are beginning with horses first, and will take up the breeding of other kinds of stock in the near future. At the present time their stable of about 100 head of horses is headed by the three stallions—Directum, 2:05 $\frac{1}{4}$; Dan Patch, 1:59 1-5, and Roy Wilkes, 2:06 $\frac{1}{2}$.

The farm will be essentially a breeding farm, and the object will be to demonstrate that the great northwest can produce as high a class of horses as any other section of the country.

Coffee Planting is the title of a sixteen-page pamphlet by Joseph Hillman and published by William S. Meyers, of the Chilean Nitrate Propoganda. The treatise has to do especially with the conditions of culture in Cuba and Porto Rica, and is full of information regarding the culture of this most important product of these semi-tropical islands.

Liberty H. Bailey.

As announced in our last issue, Professor L. H. Bailey has been appointed dean of the Cornell College of Agriculture to succeed Professor Roberts, who retires this year on account of his age.

Professor Bailey was born on a farm in Michigan and his father still living is a well-known fruit grower of that state. He was graduated from the Michigan Agricultural College in 1882, and for two years thereafter was private assistant to Dr. Asa Gray, the renowned botanist of Harvard University. In

1885 he accepted the chair of horticulture and landscape gardening at his Alma Mater, which position he filled until 1888, when he was called to his present position of Professor of Horticulture at Cornell.

Professor Bailey is probably best known through his writings, a wonderful amount of material having issued from his pen. His style is clear, easy, forcible and exceedingly clever, and the value of his contributions to horticultural literature bar others from comparison. He is at present engaged on an Encyclopedia of American Agriculture, comparable in quality and completeness to the one on American Horticulture recently issued. This, with numerous other books which he has published, taken in connection with his work in the classroom, the greenhouse and in the work of the New York Correspondence Courses in Agriculture, place him at once as a man of wonderful intellect, and of untiring energy.

He is quiet and unassuming in manner, most entertaining in conversation and charming in his personality. In the classroom the influence of this personality is most especially felt and the inspiration which his students receive is one of the most potent of his influences for good. Inspired with an intense love of nature and agriculture, it is imbibed by those who come in contact with him. Professor Bailey was loathe to accept the deanship of the college, preferring rather to follow his chosen line of work in horticulture, but was finally persuaded that it was for the best interests of the college that he accept the place. His acceptance once given he has prepared himself to do his best in the work, and the best efforts from such a man will surely count for much for the Cornell College of Agriculture.

The Wisconsin County Agricultural Schools.

In a previous number of *The Student* the Marathon and Dunn County Agricultural schools of Wisconsin were given considerable space, but the importance and significance of this idea of secondary agricultural schools warrant a great deal of attention.

It has for some time been a recognized fact that the national land grant colleges while doing a wonderful work for agriculture, were not filling the entire demand for agricultural education. There is need for instruction in agricultural lines in schools other than colleges and it was this demand that brought about the founding of county agricultural schools such as those above mentioned. These schools were founded upon the recommendation of L. D. Harvey, acting as a special commissioner appointed by the legislature, after careful study of conditions in Europe and America, and the law advocating their establishment passed the legislature in 1901. This law provided for the establishment of two such schools and these only in counties willing to make liberal appropriations for buildings, land, equipment and running expenses. However, the state was not authorized to aid a county financially until that county had maintained such a school one year, after which the state should pay half the running expenses within a maximum of \$5000 for the two schools.

Dunn county was the first to organize under the law, the resolution and appropriation providing for the school having been passed by the county board in November, 1901, this being the first of its kind in America, although Marathon county followed soon after.

Taking the Dunn county school as an example the following may be said of it:

"This school is to be very practical in its instruction. There are to be carpenter and blacksmith shops, sewing room, kitchen, laundry, and in time dairy and farm machinery, the idea being to teach farmers' boys to be good farmers and farmers' girls to be good farmers' wives in a practical way. The young men will be taught to become good stock raisers, dairymen and market gardeners.] They will learn to understand soils and the effects of the various crops upon soils. They will learn the application of scientific principles which are now being so rapidly evolved by the many experiment stations throughout the country. They will learn the principles of farm carpentry, how to frame farm buildings, the careful and accurate use of carpenters' tools. In blacksmithing they will learn to weld iron, to rivet castings and to mend and repair all kinds of farm machinery, to operate steam engines and other complicated machines. The girls and boys together will study and practice dairying, poultry raising, vegetable and flower gardening and will delve in the principles and laws of plant life. In addition to cooking and sewing the girls will take up such subjects as home management and economy, chemistry of foods, human and domestic hygiene, millinery, etc.

"It must not be understood that this school is to be entirely of an industrial character, for there will be classes in academic subjects, such as English, mathematics, elementary science, physical geography, economics, human physiology, etc. The purpose of these academic branches is to give students a well-balanced training along such lines as will be most helpful in the co-ordinate work of the school and in future life.

"The course of study for both boys and girls will cover two years and will take the young people at a stage when they have just finished the country

schools, thus filling a niche in the training of the country youth that has never before been filled. By reason of its practical course of study, the county agricultural school will increase the student's love for country life, strengthen his attachment for the farm and tend to overcome any dislike he may have for rural things.

"The school is primarily intended for boys and girls from the country who have finished the work of the country schools. No schools have hitherto been created to meet the special needs of those who, without a full high school training, want to pursue the special subjects of agriculture, manual training and domestic economy. Here the rural boys and girls will find splendid opportunities for securing more intimate knowledge of the things with which they the likely to be concerned in after life.

"They have a right to this knowledge and to the kind of training necessarily required in securing it. To compel the country boys and girls to enter into the competition of life without the special training afforded by such schools as this, is to deny them those things which are essential to success in life.

"Such training as will be given by this new school strengthens the foundation upon which every young man or young woman has to build in entering upon a career for life. Other things being equal, the young man with such practical training will possess a large power and will rise more rapidly and maintain himself more easily than if he were lacking such scholarship."

The building for this school was completed last November at a cost of \$15,800. It is 42x96 feet and three stories high. The first and second floors will be devoted to the uses of the school of agriculture and the third floor to the teachers' training school, which has but recently moved into its new quarters.

These teachers' training schools are also commendable features of Wisconsin's educational system and are eminently successful in their work. With agricultural training required of teachers and with the idea of county agricultural schools rapidly expanding, much may be expected in the development of agriculture in the State of Wisconsin in the near future.

The Seth Adams Sheep Memorial Building.

In August, 1801, there was brought to the United States, by Mr. Seth Adams, then of Dorchester, Mass., a pair of Merino sheep from France. A year or so later Mr. Adams was awarded a prize of \$50.00 by the Massachusetts Society for Promoting Agriculture, for introducing the first Merino sheep to Massachusetts. In 1807 Mr. Adams moved from Massachusetts and settled in Muskingum county, Ohio. He brought with him 25 or 30 Merino sheep, descendants of the pair imported in 1801. These were the first Merinos to be brought west of the Atlantic Coast States. Mr. Adams became a great breeder and distributor of Merinos in the West. A letter in the *National Intelligencer* (Washington), dated Marietta, O., July 17, 1810, says: "The enterprising Mr. Seth Adams arrived at this place on the 9th inst. on his way to Kentucky and Tennessee with 176 Merino sheep." Settlers of the western country regarded this breed of such importance that in the latter part of 1807 and early in 1808 the newspapers proposed every bank having national encouragement, should be obliged to give assistance in procuring them and providing for their care and increase."

Mr. Adams died in 1852 at the ripe old age of 84 years. During a long and useful life, he had constantly promoted

sheep husbandry, and unquestionably his service to the sheep interests of Ohio can never be regarded excepting as of the utmost importance.

Since the day Mr. Adams first brought Merinos to Ohio, this state has in fact been the largest and most important Merino producing state in America. By the census of 1900, Ohio is credited with about 4,000,000 sheep, with a valuation of about \$10,000,000. Far more pure-bred flocks of Merino sheep are today found in Ohio than in any other state, and the rest of our country is constantly drawing upon Ohio to improve their flocks.

In view of the great work which Seth Adams rendered to Ohio and even the nation it has been proposed that the sheep breeders and feeders of Ohio, erect a memorial to his name and fame. It has been further proposed that this be in the form of a structure to be known as "The Seth Adams Memorial Building," to be located on the campus of the Ohio State University among the buildings of the College of Agriculture, and to be devoted to sheep husbandry. This to be a beautiful structure containing a lecture room, sheep judging auditorium, museum, library of sheep literature, a Seth Adams Memorial Room in one part, with wool rooms, shearing room, dipping room, hospital and feeding paddocks in another part, the latter to be connected with the farm fields. This building to be a central point in Ohio, for the free use of all sheep organizations in the state in annual or special sessions, if they so desire. This proposed plan met with the unanimous and official approval of the Ohio Wool Growers' and Sheep Breeders' Association at their annual meeting in January. It has also the approval of the authorities of the Ohio State University, who have been fully consulted concerning the matter.

At the Wool Growers' meeting it was said that if each sheep owner in the state would contribute one cent for each sheep he owned, that a fine memorial could be erected. If this amount can be raised for each sheep in Ohio, a memorial will be constructed that the people of the state will in future look upon with justified pride. We have plenty of memorials in America to great generals, statesmen and men prominent in letters and arts, but not one monument to a great benefactor in the domain of animal husbandry. Is it not fitting that the people of Ohio should contribute to a memorial to Seth Adams? If the future sheep instruction in the College of Agriculture at the State University is to be made an important feature, as it should be in such a great sheep state, with this beautiful and useful memorial building, and a strong course of instruction in sheep husbandry, Ohio will lead her sister states in opportunities at the Agricultural College in this field.

It is proposed to make this movement widespread in the state. The name of each man, woman and child contributing, will be inscribed in the records to go into this memorial.

It is desired that each person contributing, specify how many sheep, at one cent each, he or she represents in the contribution. It is hoped that the shepherds of Ohio will contribute a total of at least \$10,000, for this memorial.

If twenty-five thousand people in Ohio will contribute to this purpose, it will represent a great state movement. All sums received will be placed in saving, to draw interest, until the necessary total is in hand to proceed with the erection of the memorial. It is hoped that all persons engaged in sheep husbandry, irrespective of breed, will contribute to this purpose. Anything that can be done to promote the importance and dignity of sheep husbandry in

our state will be for the uplifting of every breed. As occasion may justify, public statements will be issued through the livestock, agricultural and other journals, of the progress made in the creation of this memorial.

C. S. PLUMB.

Forests and Floods.

The great floods resulting from the recent heavy rains, which have fallen throughout the Mississippi valley, again remind us of the importance of taking steps to preserve the forests which now remain, and of pursuing a systematic method of reforestation. With the clearing up of forest areas, streams have become more irregular in their water stages, and floods have become more frequent and dangerous to life and more destructive to property.

On the floor of a forest is quite a thick, spongy mass of leaves, twigs, sticks, bark, moss, etc., which is able to retain much moisture, and the underlying soil is very porous with its numerous channels left by decaying roots. Upon an area such as this, considerable rain may fall without much of it running off of the surface, and then the excess is given off gradually. When the trees are removed we find a very different set of conditions. This cleared land is usually planted to cultivated crops. The organic matter decays, and the root channels are destroyed. If the region is hilly (and it usually is at the headwaters of a stream) much of the organic matter and loose soil is washed away and in many places the rocks are exposed. Rain falling upon this, runs off almost immediately, for only a small portion of it can be absorbed and retained. The result is a rapid rise in the streams. The smaller streams go rushing through their deeply washed channels, and finally empty into the great Mississippi. Here the velocity is not so

great, because it flows through a more level stretch of country, and much sediment is deposited, tending in a slow but sure way to fill up the channel and force the stream out of its banks into new or wider channels. Levees are constructed to keep the great volume of water within bounds, but in only a few years' time these are found insufficient and they must be increased and heightened. This continues year after year until now, in many places the water level of the lower Mississippi is considerably higher than the house tops in many villages only a short distance from the river. If these levees should break, the damage resulting, would be enormous.

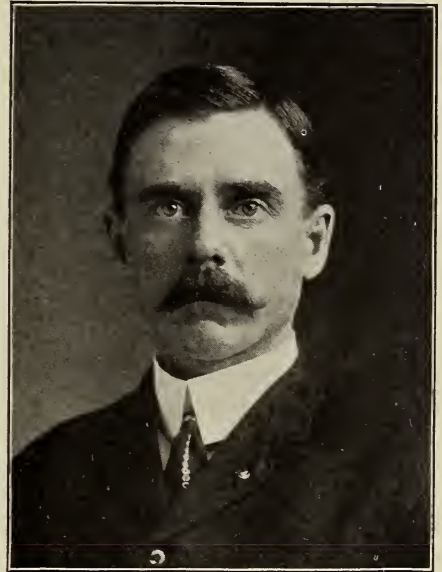
Is it not time that the nation take steps to remedy this evil that is becoming so evident? C. A. McC.

C. G. Williams.

The recent appointment of Mr. C. G. Williams as Agriculturist of the Experiment Station to succeed the late J. Fremont Hickman, has met with universal approval throughout the state. The duties of this office require for their successful fulfillment, a man of wide experience and training and one possessed of an inquiring mind, an inherent love of agriculture and a mastery of experimental details. Consequently the station was slow in its selection of a man to fill this place.

Mr. Williams was born on a small farm near Gustavus, Trumbull county, Ohio, January, 1863. He received his early education in the public schools and later spent some time at Gustavus Academy, where he went to prepare for college. The death of his father at this time, however, frustrated his plans since he was the only son, and it became his duty to take charge of the farm and keep the family together. Teaching in the near-by schools during the winter,

attending to the farm work in the meantime, he was able to provide comfortably for the family. He very soon became intensely interested in agriculture, and giving up his teaching, devoted his whole time to agriculture, to which he has given the best energies of his life. Foiled in his attempt to secure a college education, he set about securing all the



C. G. WILLIAMS

learning possible by home study, and as his work shows, his efforts in this direction have met with marked success.

Mr. Williams has been most widely known as a lecturer before farmers' institutes in the employ of the State Board of Agriculture, which work he began in 1894, and continued until his appointment to the station. He has also been very successful as a writer for the agricultural press and at different times has worked for the Country Gentleman, Rural New Yorker, National Stockman and other papers, and quite continuously for the Ohio Farmer.

Mr. Williams, therefore, comes to his new work with a wide practical experience and an interest in agriculture that few men possess. Clear-cut in his manner of thinking and in presenting a subject to an audience, practical in his ideas, and experienced in agriculture to a degree that means much to a man in such a position, he takes up the work in the prime of life with such energy and enthusiasm as to almost insure his success in this larger field.

Agricultural Education by Correspondence.

Agricultural education is in the air. There has never been a time when so much interest existed in agricultural affairs as at present. The attendance at agricultural colleges increases yearly and at a surprising rate. The demand has already come for the introduction of courses in the rural sciences into the secondary schools and even into the district schools. The last Wisconsin legislature passed a bill establishing two county agricultural schools which are now in operation and seem to fill a popular want. At the same time the legislature made it compulsory for all teachers to pass an examination in elementary agriculture before being granted even a third grade certificate. As a consequence of this law many of the high schools have introduced a course in agriculture as a part of the curriculum—in most cases the course being elective.

In its last report the committee on Methods of Teaching Agriculture of the Association of American Agricultural Colleges recommends secondary courses in agriculture and has prepared a circular explaining how such courses may be made a part of the high school program. In this state considerable interest in this matter is being exhibited by high school boards and principals.

Some of these are at present communicating with Professor Hunt relative to the adoption of such a course for the coming year. Many other instances might be cited to show the awakening interest in matters pertaining to agriculture.

All this is a source of great gratification to those having the interest of agricultural education at heart. The increased attendance at agricultural colleges and the introduction of secondary courses in agriculture will not, however, enable all who desire it to obtain a knowledge of the principles underlying agricultural practices. There is still left a large class of men who for various reasons are unable to leave the farm even to attend short courses in agriculture, and who would be glad to avail themselves of the opportunity to learn if this opportunity could be brought to their door. To reach this class the correspondence courses in agriculture have been devised and such courses are now in successful operation in several states. In general the correspondence courses as now offered may be divided into three classes as follows:

(A) Those in which text books are sent the student with directions for study, the reader being expected to report on a blank provided for the purpose on his completion of the text.

(B) Those in which printed lessons or bulletins are sent out rather indiscriminately, no particular effort being made to keep track of the work done.

(C) Those in which the lessons in a course are printed separately, one only being sent out at a time. Each lesson to be accompanied by a set of questions which must be answered and returned to headquarters before the next lesson is forwarded.

The great disadvantage of (A) is that there is no guarantee of study continuing over any considerable period. The

eager student will devour the whole book in the first few days, not really digesting it, and have nothing left for the remainder of the term. The dilatory one on the other hand will defer reading till the last moment and then hurry through it if, indeed, he does not neglect it entirely. Plan B enables one to reach a large number at a small expense but as stated above provides no means of watching the progress of the pupils. Plan C allows of more intensive work than B and distributes the reading over a longer period than A. By this method the teacher comes into frequent touch with the student and is assured of his interest, as the reader can drop out at any time by merely neglecting to send in his answers to the last lesson.

The Agricultural Student Union in looking for opportunities to increase its usefulness for the coming year decided to investigate the propriety of its undertaking to carry on such a correspondence course in this state and appointed a committee to take the matter under advisement and report later to the executive committee.

This committee desires, first of all, an expression of opinion from the members of the Union and all others interested in agricultural education. It has recently issued a circular letter to the Alumni of this college asking for an early reply and free comment on the proposed plan and hopes that the matter will receive the attention of many of them. In fact suggestions from any one interested in this subject will be gratefully received, as the committee wishes to feel assured that there is a decided need of such work before recommending it to the Union.

Plan C of those mentioned above appeals more strongly to the committee than either of the others, as it seems preferable to have a small number of readers, whose interest is evident, rather than large numbers that have no way

of manifesting interest or lack of interest. The funds available for this undertaking are very limited and it will be necessary to do the work on a somewhat modest scale, but in spite of this, much may be accomplished if the desire for the work exists.

In brief, the plan as outlined is as follows:

The course will begin next October or November, will consist of ten or twelve lessons and is to extend over a large part of the winter. It is the intention to "make haste slowly" and only one course will be attempted the first year. Students may enter at any time during the year. The first lesson will be sent to any one applying for it or to any one whose name is sent in. The receipt of the following lessons will depend on the reader himself, as no advance lesson will be forwarded until the questions on the previous one have been answered and returned. These lessons will be furnished free of cost and will be prepared especially for this course. With the report on each lesson the student will be requested to enclose postage for the following leaflet, as the funds available will not allow of paying all the postage as well as the printing.

The first course will treat of the subject of plant food and in the main an effort will be made to present some of the principles underlying good farming rather than mere practice itself and for this reason "how to do" things will not be dealt with so much as the "reasons for doing" them. While every effort will be put forth to make these lessons a more or less complete treatise in themselves and no outside study will be required, references will frequently be given to books and bulletins that will provide valuable auxiliary reading. There are doubtless many who need only the stimulus of such a plan as the one contem-

plated to convert what has been heretofore mere desultory reading into a systematic course that will be a source of great pleasure and profit to them.

The patrons of the course will be urged wherever possible to form local associations for the purpose of discussing the subjects treated in the leaflets as well as those brought to their notice by the references. It is hoped that a large number of the readers can be induced to attend the annual meeting of the Student Union, where special attractions will probably be offered them.

In the beginning the committee will undertake to look over the questions and attend to all correspondence concerning the course. In case its growth should reach the expectation of its advocates, however, it will become necessary to call for volunteers to help in the work. Under such circumstances it is to be hoped that there will be no difficulty in finding men willing to look after certain districts assigned to them. The reader of this article is requested to write to the undersigned giving his unreserved opinion as to the probable success of the undertaking outlined above.

ALFRED VIVIAN.

The Dairy School.

The Ohio Dairy School has just completed another successful term. In many ways it has been the most satisfactory term ever held. The class, numbering forty-two members, was the youngest class ever registered in the school, but notwithstanding this fact they have had better preliminary training than any of their predecessors.

The practice work of the class this year has been somewhat modified from the usual order. The class was divided into sections and during the first of the term one section was given work in taking down and assembling separators,

and the other work in the Wisconsin curd and rennet test. Following this order two weeks in succession were given with this work and then the sections were changed. In the latter part of the term the work in the creamery was divided into three parts. One week on separators, one week on starters and cream ripening, and one week on churns. More attention has been paid this year to starters and cream ripening than ever before. There is an increasing demand for this kind of work and the students took an especial interest in it.

The milk used by the school was furnished by the Crouner Dairy Company, of West Jefferson, O. This year, for the first time, practice in handling farm separator cream was given the students; it was not done to any great extent, but enough to give them some idea of how it should be done.

The skim milk returned to the patrons was pasteurized with Reid's combination heater and cooler. Bacteriological tests made of this milk show very good results. Mr. D. A. Crouner, the instructor in butter making, says that he thinks too much cannot be said of the importance of this pasteurizer.

The laboratory in Townshend Hall has been completely furnished with apparatus by the different companies manufacturing creamery supplies. The companies represented by separators were as follows: De Laval, by Alpha and Baby; Vermont Farm Machine Co., by United States; Empire Co., by Empire; Sharples Co., by Sharples Tubular; National Co., by National; D. H. Burrill Co., by Simplex. This Simplex Link Blade Separator is the first one put into a dairy laboratory. It was not allowed to be used in the United States until recently.

The authorities in charge of the school hope to have an advanced course

in dairying, so that they can bring the students back for another year. This would enable them to prepare themselves for instructors, which are sorely needed. This year Mr. Frank Mangold was the only laboratory instructor that could be obtained. There should have been at least three for the amount of work to be done. This makes it very hard to do the best work.

Nineteen out of the class of forty-two already have positions. The lack of experience greatly lessened the number. When a man has some practical experience before taking the course, he is sure to find a position waiting for him when he completes it.

Following are the names and the positions of the nineteen men:

W. C. Barrett—Will make butter in Fairview Creamery.

Clarence Coe—Will work in Centerburg Creamery.

Harry Cresman—Will work in Centerburg Creamery.

C. H. Davis—Will look after the milk routes of Licking County Creamery Co.

Clarence Ford—Will make butter for the New Springfield Creamery Co.

Otto Heller—Will make butter for J. P. Gray, Louisville, Ky.

Thomas Grogan—Will work in his own farm dairy, Wilmington.

Carl Miller—Will work for French Bros.

John W. Parkinson—Will work for Crouner Dairy Co.

E. R. Perkins—Will make butter at Lodi for Miller & Horr Warner Co.

Levi O. Parker—Will work on his father's dairy farm, Findlay, O.

Alf Sparrow—Will make cheese at Silo, O.

Earl Stewart—Will operate a milk route at Cedarville, O.

Frank Sherwood—Will operate skimming station at Oregonia.

T. R. Winter and W. H. Weatherby—Will work with Hart's Jersey herd at Painesville, O.

A. A. Weakley—Will make butter at Twin City Creamery, Basil, O.

W. L. Ballard—Will work on dairy farm at Mentor, O.

Loyal Moore—Will work in Alexandria Creamery.

Turpentine Production in the Southern States.

The supply of turpentine in the United States is being rapidly exhausted, and so rapidly is the process going on that the forests of the country will not supply the present demands for more than a few decades at most. Professor Fernow, Dean of the School of Forestry of Cornell University, has recently said that the timber supply of the United States will be exhausted within thirty years at the present rate of consumption, and this remark applies with equal force, we may say, to the turpentine forests. The fact that the species affording turpentine is also highly valued for lumber, creates a dual demand which renders the depletion of the forest of this kind especially rapid. It also brings the problem of supplying the deficiency within the pale of the forester and we would impress upon him the necessity for early and aggressive action to that end.

In this article we wish to call attention to the extent of the turpentine producing forests, the reduction in the supply of the refined material and the methods of farming practiced, pointing out incidentally some of the sources of waste.

Turpentine is of importance because of its large use as a solvent and carrier, and for medicinal purposes. It is necessary in the preparation of varnishes and comes into use in mixing paints, especially the "flat" colors. The total value

of turpentine and its co-partner—resin—aggregates many hundreds of thousands of dollars annually, and while subserving numerous industrial purposes, gives employment to a large body of men in its production.

Turpentine is obtained from a number of species of the coniferæ family, but in this country the supply is derived exclusively from one species of pine—*Pinus palustris*, Mill, commonly known as long-leaved, yellow or Georgia pine. This species forms large forests in the southeastern part of the United States, particularly in the states of North and South Carolina, Georgia, Florida and Alabama. The trees grow to large size under favorable conditions of soil. The forests are inclined to be open and free from underbrush and the thickness of the trees varies with the productive capacity of the land. The tree is found to thrive on a variety of sands, sandy loams and clays which constitute the coastal plain of the states mentioned, and includes the high, rolling hills adjoining the Piedmont Plateau and the seaward lowlands. In general it may be said to succeed best on lands naturally well drained. The best forests are found on the clay soils and the "red hill" sections of this region are frequently characterized as long-leaf pine lands.

The long-leaf pine furnishes excellent lumber as well as affording spirits of turpentine and resin. The wood is classed with the hard varieties of pine.

It is because of this dual use of the trees that there has been a very strong demand for forests of this species. The early settlers of the region utilized the trees in making shingles, and the Carolinas especially have had a wide reputation for their turpentine output during the greater part of the last century. Thus it is that we come to the forestry aspect of the question. The fact that it is a case of natural forests being de-

stroyed to yield timber and other supplies for man's use and that this process is denuding the land and exhausting the supply of the species calls for immediate attention of the forester, who should have the support of public opinion, and public funds as well, if they be necessary.

The turpentine industry of the Carolinas has passed its prime and the center of the industry is passing further south. Not only is the supply greatly reduced in that particular section, but the best forests of the region have been drawn on and exhausted so that producers are confronted with a scarcity of new forests. Prices follow the law of supply and demand and in the case of turpentine we find that five or six years ago the wholesale price of spirits at the distillery was as low as twenty cents per gallon, whereas the present marked quotations are often in excess of fifty cents per gallon. In the earlier days only the largest trees were tapped, and when forests were abundant there seemed no need of conservative methods. Just as the forests of other species were suffering from the greed and carelessness of the lumbermen, so the turpentine forests were suffering from the destructive and lax practices of the turpentine farmers. And the net result is the same in both cases. Trees once considered unprofitable are now made use of and trees are "boxed" as soon as they are large enough to admit of it.

The methods in general use have always been destructive and wasteful. The practice followed is to lease the land, including the trees, from the owner at a specified price per box or per thousand boxes. This price is governed by the size and condition of the trees and distance from the still, and ranges from a cent and a half to four cents per box. The leases run for three years, at the end of which time they may be renewed.

There is scarcely any limit to the number of trees that may be included in one farm, and they may run well into the hundreds of thousands. The farm is divided and subdivided for ease in supervision and collection. Ten thousand five hundred boxes constitute a crop and twenty-one hundred a drift.



DIPPING TURPENTINE

In boxing the trees, an ax with a blade about ten inches long is used and a slanting incision twelve to fifteen inches wide and about ten inches deep is made in the trunk of the tree about four inches above the surface of the ground. One man cuts from seventy-five to one hundred and twenty-five boxes per day, for which he is paid one and a half cents each.

The sap of the tree, which is a viscid, milky substance, exudes from the freshly cut surface and will continue to flow for a month or six weeks, depending on the condition of the tree and nature of the weather. After that time the trees are chipped. The face of the tree adjacent to the box and immediately above

it is trimmed off well down into the growing wood, and the upper line is given a triangular shape with the apex in the center and pointing downward. Chipping consists of taking a thin chip off the edge of these two surfaces to expose new wood and stimulate the flow of sap. The chipping process is repeated every week or two during the season. One man chips about 2000 trees per day, for which the pay is 60 cents per thousand. A curved blade is used for the purpose.

The sap exudes from the wood and collects in the box at the base of the tree or forms a hard crust on the surface of the trunk. That collecting in the box is richest in turpentine spirits. This accumulation is gathered periodically, the number of dippings depending upon the length of time the trees have been in use. The first year, from seven to eight dippings are obtained, while in the fourth or fifth year the trees will not afford more than three or four dippings. In dippings, a trowel-shaped paddle on a three-foot handle is used. The average dip is obtained in about the third year, when a drift yields five barrels of crude turpentine. Thirty-five cents per barrel is paid for dipping.

The crude material then goes to the still, which consists of a large copper retort set on a furnace, with the top connected with a worm immersed in a tank of water. The crude turpentine is turned into the retort until full, when the fire is started. From two to three hours are required to complete the distillation process. The spirits boil at about 165° C., and with them comes off some water vapor. Both are condensed and run into a large receptacle, where they are allowed to stand a short time. The spirits with a specific gravity of 0.862 rise to the top and are drawn off, while the water settles to the bottom, thus effecting a gravity separation. The

spirits, about 95 per cent. pure, are placed in fifty-gallon barrels.

The resin, which is a limpid fluid when hot, is drawn from the retort into a large vat straining through a number of sieves in the process, which remove the large amount of foreign material, consisting of chips, pine needles, etc. From fifty to sixty per cent. of the crude turpentine is resin, twenty to twenty-five per cent. is spirits and the remainder waste.

Commercially the resin is divided into eleven grades, determined by the color and purity. The best grades are obtained from the first dippings of the trees and the older the boxes the poorer the quality of the resin.

Now, as to the effect of the boxing on the trees. Where the trees are large, two or even three boxes are made on one tree. From one-eighth to one-quarter of the trees die the first year from the shock of the operation, and in succeeding years some of the trees continue to die, but not in such large numbers as during the first year. Dippings are never profitable for more than seven or eight years and frequently for a much less time.

The lumber derived from the trees that have been tapped for turpentine is not considered as valuable as that afforded by the tree in its virgin state. It is brash, brittle and less durable.

The Bureau of Forestry has recently made some investigations to determine what can be done to reduce the mortality of the tapping operation and prolong the usefulness of the trees and have found that by carefully making a transverse incision and using artificial boxes or buckets instead of chopping so deeply into the tree, the loss of crude turpentine in gathering is very much less, and the death rate is greatly reduced.

While such methods would be helpful, they are not sufficient to maintain the supply. The virgin forests of the

turpentine producing species are too limited in extent. There must be some systematic planting and rotation of the species to keep the yield of its two products up to the industrial demands. The trees do not grow especially rapid and from twelve to fifteen years is required to grow a tree to tapping size. With these facts in mind it is reasonable to expect a much greater advance in the market price of spirits and resin as well as for the lumber within the next decade or two than has occurred in the last decade. The turpentine farmers have largely destroyed what it has taken nature, in many cases, a century to produce and it will be a long series of years before it will be possible to get back to the old basis, if at all. And besides the practices to attain this end have not yet been begun. There must be a far-sighted policy on the part of the national and state governments supported by a thoroughly organized and efficient Department of Forestry, adequate instruction in our professional institutions and a live, healthy public opinion that uphold all rational attempts at such a policy.

We have a good beginning in the first two of these essentials, but the last is lamentably deficient. The United States Bureau of Forestry is broad in its influence and highly efficient in its work. The land grant colleges of the country and some private institutions have taken up the problem and several of them have provided extensive courses in the science and art of forestry. They have opened up a new field of usefulness and we are beginning to hear of the profession of Forestry. The field is a broad one and calls forth high ideals and much of the Altruistic spirit, for there is little hope of large fortune, but abundant opportunity of a useful life close to nature's inspiring examples.

E. O. FIPPIN.

Agricultural Education Among the Colored People of the South.

When the Emancipation Proclamation liberated the servile element of the south the question of slavery was practically settled, but the race which, by its presence, provoked debate between north and south, was still to be a prominent factor in the economic condition of the country. From savagery to slavery, and thus incidentally civilization, these people experienced what some are wont to designate the first lot of all great peoples. While this lot was terrible for the slave, while it severed paternal relations, while it disturbed the foundation of the republic and called father against son and brother against brother upon the battlefield—notwithstanding all this we would look now to the future with much hope if these people give promises of advancing American greatness and enterprise. Education must subserve this purpose—by no other means could it be achieved. The lamented Garfield once said that “Next in importance to freedom and justice is popular education, without which neither justice nor freedom can be permanently maintained.”

From the early '30's to the eve of the civil war, efforts were made for the education of the negro in the north, and so early did industrial training even appeal to those who had the best interest of the race at heart. In this connection Samuel E. Cornish, Charles L. Reason and Frederick Douglass stand out in history as faithful mentors of the efficacy of this system of training for their people. Although schools existed for the negro prior to the civil war, the real demand for them was not felt until after that period. Even as early as 1861 the frowning guns of Fortress Monroe overlooked a school for “Contrabands of War.” At one time between '63 and '65 General John Eaton, afterward United States

Commissioner of Education, had under him in Mississippi 770,000 negro people receiving instruction upon their urgent request to General Grant. After the war, schools were rapidly multiplied, with industrial training a prominent feature, though the agencies of the Freedmen's Bureau established by Congress in '65, the American Missionary Society, the American Baptist Home Missionary Society, the Society of Friends, etc. Lincoln Institute, Jefferson City., Mo., was established in '66 by the discharged members of the Sixtysecond and Sixtyfifth regiments, United States Colored Infantry. Further promises were awaiting the colored youth athirst for light.

Overlooking Hampton Roads and on the historic site of the Indian village, Kecoughtan, “from which the Indians were driven by the white settlers, and near the spot where the first negro slaves were sold in America,” stands Hampton Institute, established in 1868—dear to Indian and negro alike—to the latter for Armstrong, its founder, for its industrial training offered negro youth, and for the rugged “Wizzard of Tusgegee,” Booker T. Washington, through whom is radiated into the hearts of millions, the strength of leadership, the skill of industrial work, the habit of ownership, the wholesomeness and fruition of agriculture.

But General Armstrong was not done in seeing the benefits of training in agriculture and the mechanic arts. The rustic store-keeper of Vermont had seen as if by an eye of fortune the virtue of the soil and mechanics through which was to be promoted “the liberal and practical education of the industrial classes in the several pursuits and professions of life.” Sixty-five land-grant institutions and the existing system of agricultural education stand today eloquent monuments to this providential

foresight. Singularly enough the hand which subscribed unqualified manhood to a people signed also, in the eve of his beneficent career, the document by means of which this same people should rise to a citizenship befitting an American. Of these 65 land-grant institutions, twelve are devoted to the education of negro youth. These institutions have the same wonderful momentum characteristic of all modern instruction in agriculture, a force which vouchsafes the material and social welfare of their people.

In 1900, 37,696 students were attending the 145 secondary and higher grade schools. Of this number 15,683 are pursuing courses in industrial training, over 2000 of whom are studying agriculture. As illustrative of the class, some of the work done in agriculture by one or two of the most prominent of these schools may be cited.

Hampton Institute possesses 60 buildings and 796 acres of farm and school lands. Their agricultural course covers three years, and girls as well as boys pursue it, over 400 students being enrolled in the department. The facilities for laboratory and field work are quite complete. Besides the day and night schools, there is offered a summer normal institute in which are included courses in nature work, practical agriculture and dairy husbandry. The summer normal is the largest of its kind for colored teachers. On the belief that the salvation of the masses of the race lies in the soil its work "was made to center about agriculture and nature study." "Nothing is more important," says the Southern Workman, "than that the teachers of this race should be convinced of the necessity of such instruction as will make their pupils contented to live in the country and get their pleasure and profit from the common things

of life." Not satisfied with this extensive work the school in 1899 introduced a new regime.

The institution introduced agriculture into a country school over which it has control and which is located on the grounds, and receives 300 to 400 pupils from 3 to 17 years of age.

A School garden was conducted for them in 1899 by way of experiment and it has proved so successful that it will be made permanent. About 170 beds were laid out and two pupils assigned to each bed. As a result of this, many gardens were started at home by the children. In his report of '99-'00, the Commissioner of Education says in reference to the work, "Three ideas important factors in solving the negro problem seemed to stand out and develop in the minds of the children; (1) the idea of possession, brought out by the individual bed system; (2) the idea of production, brought out and strengthened by allowing the children to carry home the products of their gardens; (3) the idea of co-operation, by having much of the work done as class work, all doing the same kind of work during part of each period."

Tuskegee Institute scarcely needs introduction. Opened July 4, 1881, "in an old church and a little shanty that was almost ready to fall down from decay" and with 30 pupils, it has, through the Herculean and indefatigable efforts of its renowned founder, grown to possess 2500 acres of land, six hundred head of livestock, and fifty vehicles. The school has besides 25,000 acres of mineral land granted by the federal congress in 1899, for endowment purposes. A day school and a night school are maintained, both covering the same course. No tuition is charged—only an entrance fee of \$1.50 and board, including furniture, room, laundry, lights, fuel,

etc., \$8 per month. They have a substantial building, which was erected in 1897, at a cost of \$10,000, and well equipped for practical and scientific agriculture. Room for adequate laboratory and museum was provided in the last year at a cost of \$5000. This was made necessary to facilitate the work of the Experiment Station granted the school by the state legislature in 1897.

The agricultural course covers two years, and girls are admitted as well as boys. There are now 80 students pursuing the regular course and over 300 students of the school receive some instruction in agriculture. In this department there are ten instructors.

It is noteworthy that, with the exception of three or four, all of the graduates who have gone out from this department in the last six years, are working in agriculture. While most of these are engaged in practical agriculture, one is in charge of an industrial school of which agriculture is made the basis, and another is starting a very admirable agricultural school in Louisiana.

Mr. Jas. N. Calloway, one of the instructors, is now in Africa with three Tuskegee graduates and four former students of the institution introducing cotton raising under the supervision of the German government into the Colony Togoland.

Nearly nine-tenths of the negro population of this country is found in 18 states of the south, 8 states of which contain a negro population above 600,000. There is approximately one negro to every two white persons in these states. In South Carolina and Mississippi the negro element predominates, there being over 140,000 negroes to each 100,000 whites, while in Georgia is found the greatest negro population, 1,034,813. The total negro population of school age, 5 to 20 years, in these states is 3,228,237, while the total for the United

States is 3,485,188. Of the total negro population ten years of age or over, 2,853,194 are illiterate, representing upwards of 46.2 per cent. of the total illiteracy of the country.

These figures alone stand as convincing arguments for the necessity of a liberal education for the negro. The argument given that the negro must find succor in the cultivation of the soil strikes one with appealing force, especially when it is noted that in these 18 states mentioned nearly three-fourths of all persons engaged in gainful occupations are pursuing agriculture as a livelihood.

Extensive and invaluable as is the work done by Hampton, Tuskegee and numerous other such schools in the south, it may not be out of place here to offer an appeal to the influential in behalf of negro industrial training, especially in agriculture. "The agriculture of a country must ever be largely affected by the condition and character of the peasantry, by whom its labors are performed," says one author and if this is true the negro has enveloped in and around him the welfare of the other race as well as his own. With this fact in mind we are not at all surprised that our best schools get their principal support (especially Tuskegee) from private sources, for the right thinking classes perceive that in helping the negro they are adding strength to the whole economic fabric of America.

C. C. POINDEXTER.

A new set of harness is being made for the team recently purchased by the Department of Animal Industry. The harnesses are of the heavy work pattern, with heavy brass mountings bearing appropriate initials and they will add much to the appearance of the beautiful black team. They are being made by William Burdell, Jr., whose advertisement appears elsewhere in this issue.

College News.

Ground has been broken for the new Engineering Building, which is to be placed to the rear of the line between the Main Building and Chemical Hall.

La Motte Ruhlin, O. S. U., 1901, has been appointed an assistant in the Bureau of Soils, U. S., Department of Agriculture, and has been assigned this year to Kentucky.

Several students have been quarantined and some compelled to leave school on account of a serious epidemic of scarlet fever in the city.

H. A. Clark, '02, who is with the Bureau of Soils in the Division of Tobacco Investigation, and who has been located in Connecticut, has been transferred to Marion, Ala.

Professors Decker and Plumb attended the meeting of the Ohio Jersey Cattle Club which was held at Cherry Farm, owned by Frank W. Hart, near Painesville. The members were pleasantly entertained by Mr. Hart, who took them on a special car to Painesville for luncheon. Mr. Hart owns one of the finest Jersey herds in the country.

The Department of Animal Husbandry recently purchased of Mr. F. W. Hart, of Cleveland, a Jersey bull calf, "King's University Lad." He was sired by "King of St. Lamberto King," and out of "Exile's Kalmia." His sire is the most celebrated of living Jersey bulls today, while the sire of his dam, "Exile of St. Lambert," has more tested daughters to his credit than any Jersey bull on record. The breeding of the bull purchased for the University represent the very richest and most valuable kind.

The agricultural class in dairying visited several creameries in Licking and Fairfield counties the latter part of the term and also paid a visit to Mr. D. A. Crouner's creamery at West Jefferson.

Professor Plumb lectured before the Pennsylvania Jersey Cattle Club at Pittsburg, March 19.

General Agricultural News.

The Texas legislature has appropriated \$350,000 for each of two years for the A. & M. College, the money to be used largely for building purposes.

Hugh E. Ward, chief assistant in soil bacteriology at the University of Illinois, died of heart disease December 29.

J. T. Stinson, director of the Missouri Fruit Station, has resigned to accept the position of superintendent of pomology in the Department of Horticulture at the Louisiana Purchase Exposition.

Andrew M. Soule has been elected director of the Tennessee Station, with which he has been connected as agriculturist and vice director.

R. W. DeOrmond, a graduate of the Kansas Agricultural College, and recently student assistant in horticulture, has been appointed horticulturist of the Alaska Station. Work will be carried on in the improvement of native fruits, such as cranberries, raspberries and strawberries and in the production of hardy apples, etc.

The government of Nicaragua will send fifteen students annually to colleges of agriculture in the Southern States.

The Sharon Biological Observatory, a summer school for teachers at Sharon,

Mass., will experiment in forestry on a tract of 300 acres of woodland, which it proposes to make into a model forest. Application has been made to the Bureau of Forestry for a working plan.

An examination was held for the position of laboratory assistant in the Bureau of Soils, U. S. Department of Agriculture, March 24.

A course of forestry has been established at the University of Toronto.

In order to encourage investigations regarding the increase of fertility in soils due to the action of bacteria and other micro-organisms under the influence of mineral manures, with special reference to manuring with basic slag, Verein der Thomasphosphatfabriken has instituted a competition with prizes amounting to £1950. The competition is open to all and the essays, written in German, must be in by February 1, 1906.

Joseph Burtt Davy, instructor in botany in the University of California, has accepted the position of State Agrostologist and Botanist to the Department of Agriculture of the Transvaal, with headquarters in Pretoria.

At a recent meeting of the trustees of Cornell University an anonymous gift of \$150,000 was announced for the establishment of a pension fund.

The death is announced of A. Millardet, who occupied the chair of botany in the University of Bordeaux for 25 years. He was widely known through his work on fungicides, especially with reference to those of the grape, and was the discoverer of the value of the fungicide now known as the Bordeaux mixture.

The experiment of consolidated schools in which the principles of agri-

culture are to be taught is to be tried in each of the five eastern provinces of Canada. The plan is to unite the rural schools in a district and convey the children to a central school where, besides the usual studies of the eight grades, and possibly the high school, domestic science, manual training and nature study will be taught. Eleven Canadian teachers have been sent to the United States for a six months' course of training in agriculture, after which they will spend two months at Guelph. A part of these will act as principles of these schools. The plan is being financed for three years by Sir William Macdonald, of Montreal.

The largest irrigation dam in the world was recently completed in the Nile at Assuan. It is a mile and a quarter long, 82 feet high, 80 feet thick at the base and 24 feet at the top and will hold up the waters of the river for a distance of 147 miles. It is constructed of solid granite and cement on a granite foundation.

Book Reviews.

PRINCIPLES OF ANIMAL NUTRITION. By Henry P. Armsby. John Wiley & Sons, New York. Price, \$4.00.

The increase in our knowledge of the feeding of farm animals during recent years has been very marked, and especially in the matter of animal nutrition as a process has much valuable work been done. The complex nature of the organic compounds concerned in the development of muscle and fat—more strictly the complexity of the metabolic processes of life—have presented to the investigator a series of problems which are complicated in the extreme. Much of importance has been done, however, and the collected material is an interesting and profitable study for the student of animal industry. It is this material that the book presents in a connected and classified form from many isolated facts and experiments, a thing that has never before been attempted. The book is not a manual of stock feeding nor is it an attempt to display the practical in the least degree. Its object is rather to

present in systematic form to students and investigators "a summary of our present knowledge of some of the fundamental principles of animal nutrition, particularly from the standpoint of energy relations, with special reference to their bearings on the nutrition of farm animals." The metabolism of food both in relation to supply and to the energy produced is discussed in a systematic and lucid manner peculiar to the author's style. The book stands alone in the place which it fills and is a boon to the student of animal nutrition. It is a treatise designed for investigators and students and will undoubtedly secure a prominent place at once in the libraries of such men.

PRINCIPLES OF HOME DECORATION. By Candace Wheeler. Doubleday, Page & Co., New York. Price, \$1.80.

It has been said that "he who creates a home creates a potent spirit which in turn doth fashion him that fashioned." The decoration of our homes is an art that hath but few masters. Since there are endless personal tastes there are infinite combinations of color, of fabrics, of furnishings, each of which may please the particular person who designed it, yet there is a law of appropriateness in all which must not be ignored if our homes are to be really beautiful. The author of this remarkable book is a recognized authority on the principles which should underlie the decoration of a home and this is not the first book that has issued from his pen.

The book is a most pleasingly written edition, and with this subject which would seem to offer chance for mere rules the author has exhibited a style of expression which holds one like fiction. He discusses the subjects of character in homes, the laws of color and appropriateness, the treatment of walls, ceilings and floors for various effects, draperies, furniture, etc., with direct discussions of the treatment of each room alone from parlor to kitchen. With no attempt at formulae or rules the book holds to its purpose throughout and discusses principles. It is beautifully bound, pleasingly illustrated and bears a large plain type which adds not a little to its value.

Agricultural Chemicals and Fertilizers.

The demand continues strong for the leading ammoniates, without, however, any special feature. Nitrates are firm and business is of moderate proportions, while inquiry from the western farmers is expected to develop before long. Prices for potash salts have been fixed for the year and will remain unchanged until the first of March next, when the customary enhancements take place.

AMMONIATES.

Nitrate of Soda, spot, per 100 lbs.....	\$2 00	a	\$2 05
Cottonseed meal, p. ton. c. i. f. N. Y..	27 00	a	28 00
Sulph. ammonia	2 12½	a	3 15
Dried Blood, New York, low grades..	2 60	a	2 65
Dried blood, Western, high grade, fine ground	2 70	a	2 75
Fish scrap, at New York.....	2 55	and	10
Tankage, per unit.....	2 60	a	10

PHOSPHATES.

Acid phosphate, per unit.....	55	a	60
Bone black, spot, per ton.....	16 00	a	17 00
Ground bone, per ton.....	21 00	a	23 50
S. C. phosphate rock, ground, per 2,000 lbs.....	5 00	a	5 50
S. C. phosphate rock, f. o. b. Ashley River, 2,400 lbs. dried.....	3 25	a	3 50
Florida, high-grade phosphate rock, f. o. b. Ferdinand, per ton.....	6 50	a	7 00
Tennessee phosphate, f. o. b. Mt. Pleasant, domestic	3 50	a	3 60
Double manure salt (48 a 49 p. c. less than 2½ p. c. chlorine), shipment, per lb.....	1 09	a	
		Basis	48 p. c.
High grade manure salt (90 a 93 p. c. sulphate potash), shipment.....	2 08	a	
		Basis	90 p. c.
Manure salt, in bulk, 20 p. c. per unit.			

POTASH.

Kainit, future shipment, per ton.....	9 05	a	
Mur. potash, 80 p. c., future shipment	1 80	a	
Keiseret, future shipment, per ton....	7 35	a	7 50

Wanted: MARCH NUMBERS OF THE AGRICULTURAL STUDENT. By an oversight the March issue was entirely exhausted. Any one returning a March copy to us will receive in return 6 cents in stamps and the favor will be greatly appreciated.

AGRICULTURAL STUDENT PUBLISHING CO.

Columbus, Ohio.

